

REMARKS

Status

This Amendment is responsive to the Office Action dated April 20, 2004, in which Claims 1-6, 8, 15-29 and 32-35 were rejected; Claims 7, 9, and 30 were allowed; and Claims 10-14, 31, and 36 were objected to. No claims have been canceled; Claims 1, 2, 5, 7, 9, 28, and 30 have been amended; and no new claims have been added. Accordingly, Claims 1-36 are pending in the application, and are presented for reconsideration and allowance.

Drawings

The drawings stand objected to. A set of formal drawings is being submitted (under separate cover on even date) to the Draftsperson, and as submitted, the drawing objections are believed to be overcome. With regard to Figures 2, 4(b), and 5: the text of Figure 2 is not blurred; "none-iris" has been changed to "non-iris" in Figure 4(b); and the text of step 501 is within the box in Figure 5.

With regard to Figure 8, this figure is amended to include a dashed line to define left half region 604 and right half region 606, as recited in the Specification at page 12, lines 26-28. No new matter is added by this amendment to Figure 8.

Withdrawal of the drawing objection is respectfully requested.

For the Examiner's convenience, a copy of the formal drawings is attached to this Amendment.

Allowable Claims

Claims 7, 9, and 30 are allowed. Applicants thank the Examiner for the allowance of these claims. Claims 7, 9, and 30 have been rewritten in independent form, and as rewritten, are believed to be in condition for allowance.

Claims 10-14, 31, and 36 stand objected to. Claims 10-14, 31, and 36 are dependent on allowed rewritten Claim 9 or Claim 30. As such, Claims 10-14, 31, and 36 are believed to be in condition for allowance.

Claim Rejection - 35 USC § 112

Claims 2 and 28 stand rejected under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. More particularly, the use of the phrase “mean intensity analysis” is objected to.

Commonly assigned US Patent No. 6,690,822 is incorporated by reference into the instant application, as noted in the Specification at Page 6, starting at line 25. US Patent No. 6,690,822 describes color mean statistics, for example, see Col 3, lines 40-49. Accordingly, Claims 2 and 28 are not indefinite, and withdrawal of the objection is respectfully requested.

Claim Rejection - 35 USC § 102

Claims 1, 5, 16-18, 21, 23-27, 29, 33, and 35 stand rejected under 35 USC 102(e) as being anticipated by US Patent No. 6,633,655 (*Hong*). This rejection is respectfully traversed.

Hong is not directed to detecting iris colored pixels. Rather, *Hong* is directed tracking the eye pupils. This is often referred to as “eye gaze tracking” and is accomplished by looking at the eye pupils.

Hong operates in a controlled environment. For example, *Hong*’s method starts from a **known** face, stating:

“... the approximate distance of the face of an observer from the display is **known** so that the approximate size of a face in each video image is **known**.” (Col 11, lines 41-44). (emphasis added) (See also Col 12, lines 8-11.).

With the known face being of a known size, *Hong* restricts the search of eye pupils to candidate eye regions, stating:

“Locating the candidate eye pupil regions may be restricted to candidate eye positions of the candidate face region.” (Col 6, lines 21-23).

Thus, *Hong* is tracking the eye pupils, stating:

“The analyzing step may detect the centres of the eye pupils as the centroids of the candidate eye pupil regions.” (Col 6, lines 33-35).

Thus, *Hong* does not teach detecting iris colored pixels. Nor does *Hong* teach grouping the pixels into clusters since *Hong* controls the number of pixels, stating:

“The resolution is reduced such that the face of an adult observer occupies about two or three pixels in each dimension as indicated in FIG. 7.” (Col 11, lines 44-47).

In the present invention, the search for iris color pixels is not restricted or limited to eye regions since the eyes are unknown. Eye positions are determined by finding iris color pixels, which – in contrast to *Hong* - can be found in non-eye regions since iris color pixels do not necessarily belong to irises. These features of the present invention of detecting a plurality of iris colored pixels and grouping the plurality into clusters are clearly claimed in independent Claims 1 and 27 and are not taught by *Hong*. As such, independent Claims 1 and 27 are not anticipated by *Hong*.

Claims 5, 16-18, 21, 23-26, 29, 33, and 35 are dependent on Claim 1 or 27, and therefore include all the features thereof. For the reasons set forth above with regard to Claims 1 and 27, Claims 5, 16-18, 21, 23-26, 29, 33, and 35 are also believed to be patentable.

With specific regard to Claim 5, *Hong*'s projection profile described at Col 15, lines 12-15 is not accomplished to determine if a cluster should be removed from consideration, a feature clearly claimed in Claim 5. As such, Claim 5 is not anticipated by *Hong*.

With specific regard to Claims 25-26 and 35, *Hong* evaluates a ratio of a distance from eye-to-mouth to a distance between the eyes. In contrast, the present invention evaluates a ratio of a distance from a left corner of the mouth to the right corner of the mouth to the distance between the eyes. As such, Claims 25-26 and 35 are not anticipated by *Hong*.

Claim Rejection - 35 USC § 103 – *Hong/Dufaux*

Claims 2 and 28 stand rejected under 35 USC 103(a) as being unpatentable over *Hong* in view of US Patent No. 6,711,587 (*Dufaux*). This rejection is respectfully traversed.

Claims 2 and 28 are dependent on Claim 1 or 27, and therefore include all the features thereof. For the reasons set forth above with regard to Claims 1 and 27, Claims 2 and 28 are also believed to be patentable.

In addition, *Dufaux* does not teach a method of selectively applying histogram equalization to particular images. Rather, *Dufaux* applies histogram equalization to any image regardless of their mean intensity statistics.

In contrast, in the present invention, the color histogram equalization of the digital face image is performed based on a color mean statistical analysis of the digital face image. This feature is clearly claimed in Claims 2 and 28. Accordingly, Claims 2 and 28 are believed to be patentable.

Claim Rejection - 35 USC § 103 – Hong/Dufaux/Gonzalez and Woods

Claims 3 and 4 stand rejected under 35 USC 103(a) as being unpatentable over *Hong* in view of *Dufaux*, and further in view of *Gonzalez and Woods*’ “Digital Image Processing”. This rejection is respectfully traversed.

Claims 3 and 4 are dependent on Claim 1, and therefore include all the features thereof. For the reasons set forth above with regard to Claim 1, Claims 3 and 4 are also believed to be patentable.

In addition, in order to apply a probability analysis (e.g., Bayesian model), some property (for example, intensity) probability distributions of two classes (e.g., pupil and non-pupil) are required. *Hong* does not provide an intensity (or other property) probability distribution of pupil and an intensity (or other property) probability distribution of non-pupil. Thus the references cannot be combined as suggested by the Office Action, and Claims 3 and 4 are believed to be patentable.

Claim Rejection - 35 USC § 103 – Hong/Chen

Claims 6 and 8 stand rejected under 35 USC 103(a) as being unpatentable over *Hong* in view of US Patent Application No. 2002/0136450 (*Chen*). This rejection is respectfully traversed.

Claims 6 and 8 are dependent on Claim 1, and therefore include all the features thereof. For the reasons set forth above with regard to Claim 1, Claims 6 and 8 are also believed to be patentable.

In addition, *Chen*’s paragraph 0031 (on Page 3) reveals that *Chen* determines the aspect ratio exclusively for a shape of a circle. The present

invention as claimed in Claim 6 has no such restriction, and accordingly, Claim 6 is believed to be patentable.

With regard to Claim 8, *Chen's* paragraph 0025 (on Page 2) reveals that *Chen* groups candidate pixels into the same group if their distance is specifically no more than one. In contrast, Claim 8 of the present invention does not restrict the distance between the pixels in a group to one, and accordingly, Claim 8 is believed to be patentable.

Claim Rejection - 35 USC § 103 – Hong/Luo/Gonzalez and Woods

Claims 15 and 32 stand rejected under 35 USC 103(a) as being unpatentable over *Hong* in view of US Patent No. 6,151,403 (*Luo*), and further in view of *Gonzalez and Woods' "Digital Image Processing"*. This rejection is respectfully traversed.

Claims 15 and 32 are dependent on Claim 1 or Claim 27, and therefore include all the features thereof. For the reasons set forth above with regard to Claims 1 and 27, Claims 15 and 32 are also believed to be patentable.

Claim Rejection - 35 USC § 103 – Hong/Funayama

Claim 19 stands rejected under 35 USC 103(a) as being unpatentable over *Hong* in view of US Patent Application No. 2001/0014182 (*Funayama*). This rejection is respectfully traversed.

Claim 19 is dependent on Claim 1, and therefore includes all the features thereof. For the reasons set forth above with regard to Claim 1, Claim 19 is also believed to be patentable.

Claim Rejection - 35 USC § 103 – Hong/Luo

Claims 20, 22 and 34 stand rejected under 35 USC 103(a) as being unpatentable over *Hong* in view of US Patent No. 6,151,403 (*Luo*). This rejection is respectfully traversed.

Claims 20, 22 and 34 are dependent on Claim 1 or Claim 27, and therefore include all the features thereof. For the reasons set forth above with regard to Claims 1 and 27, Claims 20, 22 and 34 are also believed to be patentable.

Summary

Should the Examiner consider that additional amendments are necessary to place the application in condition for allowance, the favor is requested of a telephone call to the undersigned counsel for the purpose of discussing such amendments.

For the reasons set forth above, it is believed that the application is in condition for allowance. Accordingly, reconsideration and favorable action are respectfully solicited.

The Commissioner is hereby authorized to charge any fees in connection with this communication to Eastman Kodak Company Deposit Account No. 05-0225.

Respectfully submitted,



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Enc: copy of formal drawings being submitted to the Official Draftsperson
Annotated sheet showing the changes to Figure 8

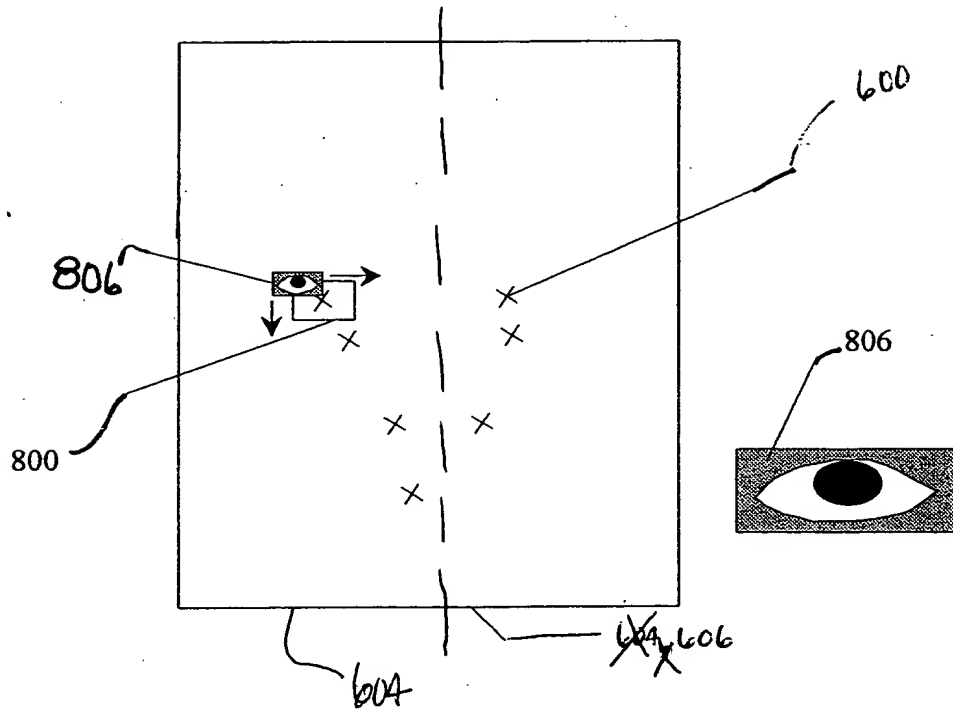


FIG. 8